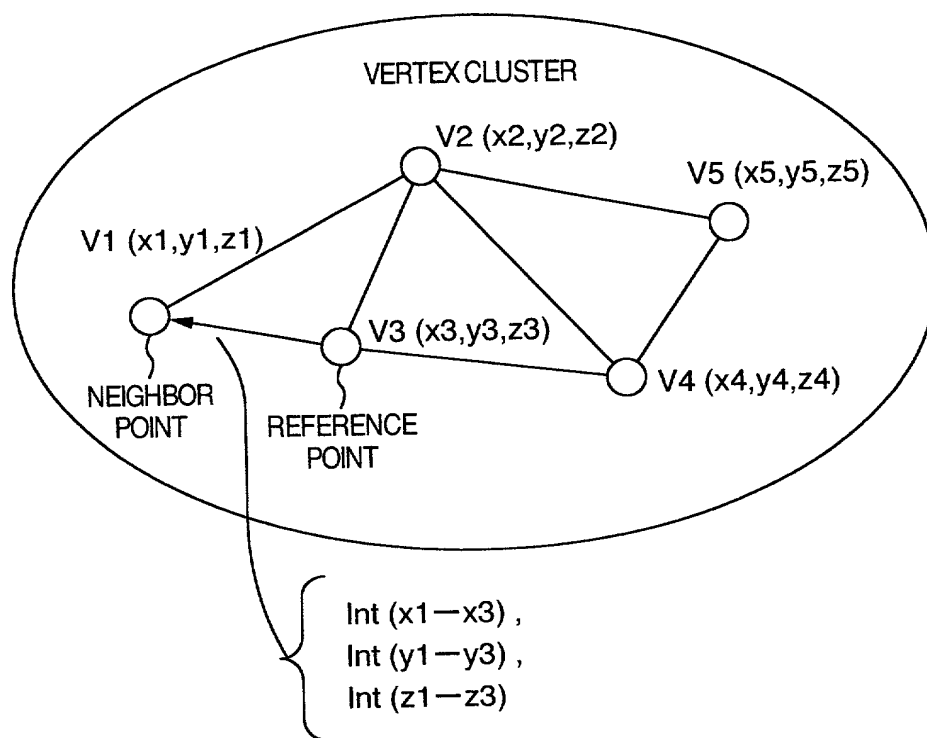
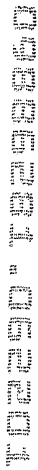
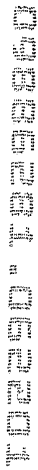
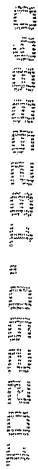
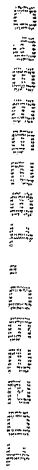


FIG.1



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## FIG.3A

INTEGER DIFFERENTIAL EXPRESSION OF IN-CLUSTER COORDINATES  
(REFERENCE POINT=V3)

VERTEX	X - COMPONENT	Y - COMPONENT	Z - COMPONENT
V1	$\text{Int } (x1-x3)$	$\text{Int } (y1-y3)$	$\text{Int } (z1-z3)$
V2	$\text{Int } (x2-x3)$	$\text{Int } (y2-y3)$	$\text{Int } (z2-z3)$
V3	$x3$	$y3$	$z3$
V4	$\text{Int } (x4-x3)$	$\text{Int } (y4-y3)$	$\text{Int } (z4-z3)$
V5	$\text{Int } (x5-x3)$	$\text{Int } (y5-y3)$	$\text{Int } (z5-z3)$

## FIG.3B

FLOATING POINT DIFFERENTIAL EXPRESSION OF IN-CLUSTER COORDINATES  
(REFERENCE POINT=V3)

VERTEX	X - COMPONENT	Y - COMPONENT	Z - COMPONENT
V1	$x1-x3$	$y1-y3$	$z1-z3$
V2	$x2-x3$	$y2-y3$	$z2-z3$
V3	$x3$	$y3$	$z3$
V4	$x4-x3$	$y4-y3$	$z4-z3$
V5	$x5-x3$	$y5-y3$	$z5-z3$

FIG.4

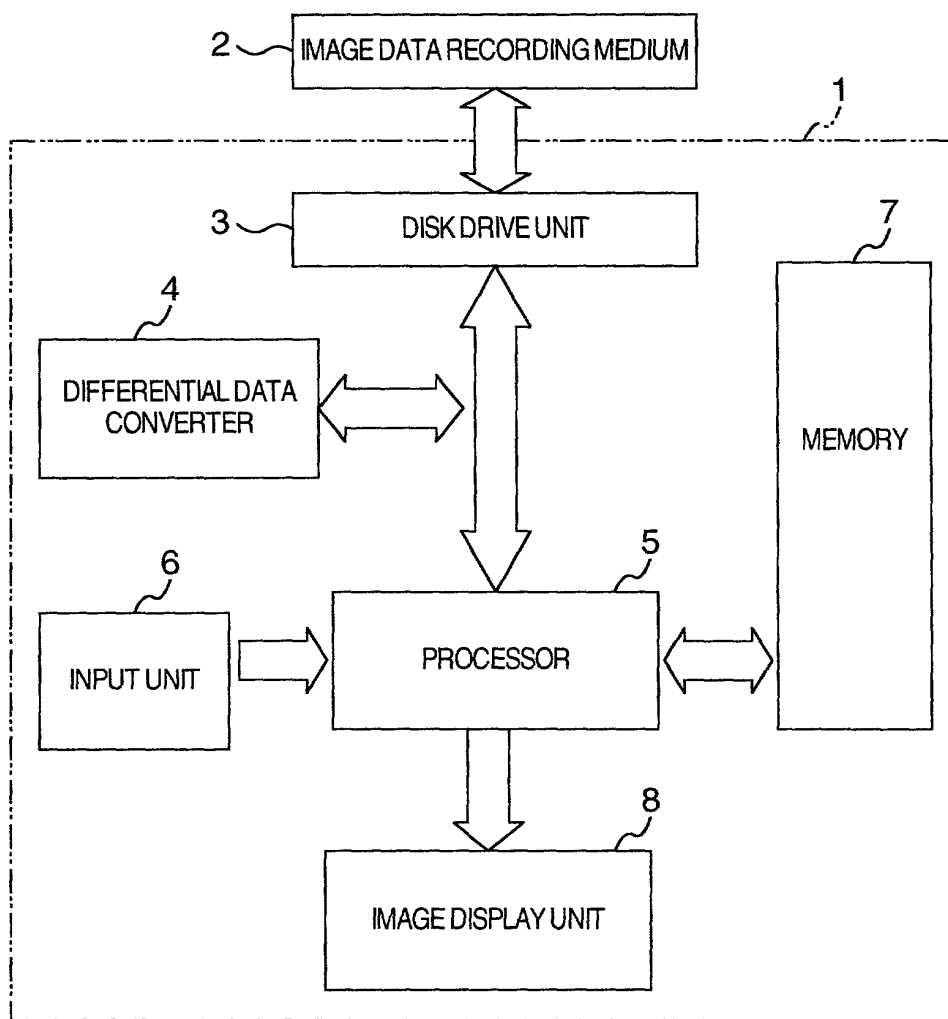


FIG.5

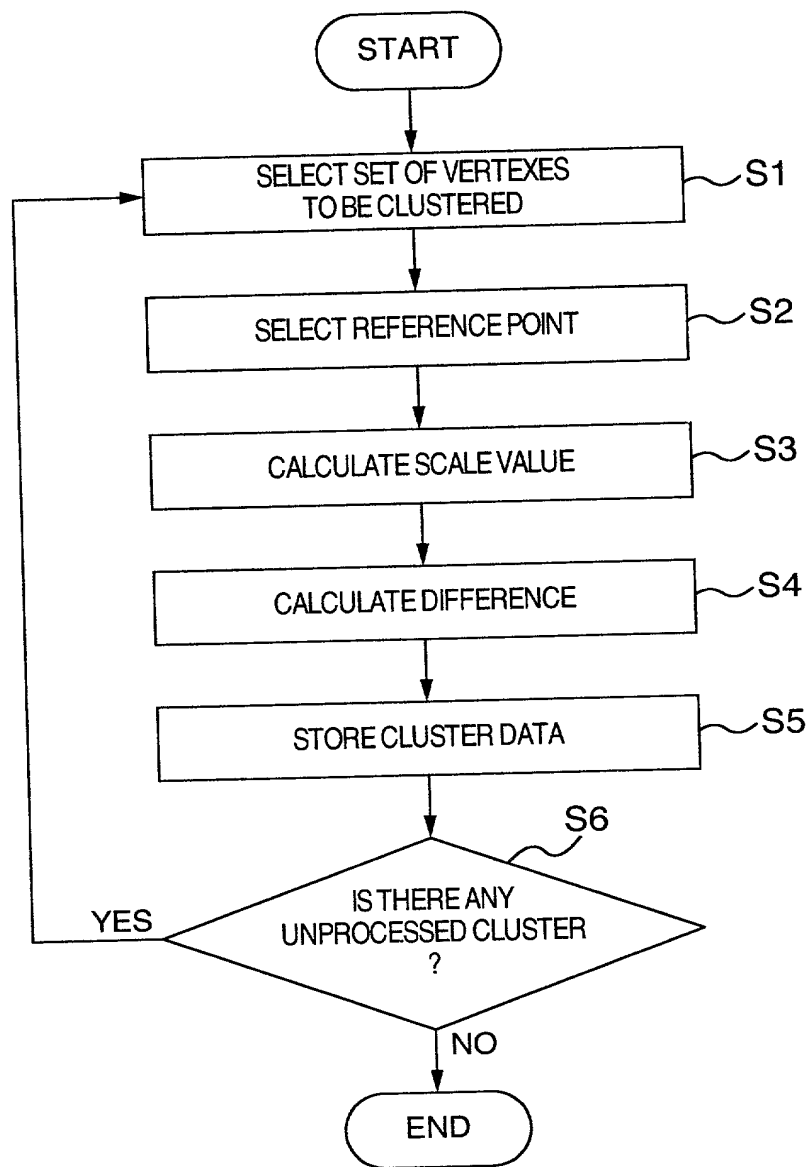


FIG.6A

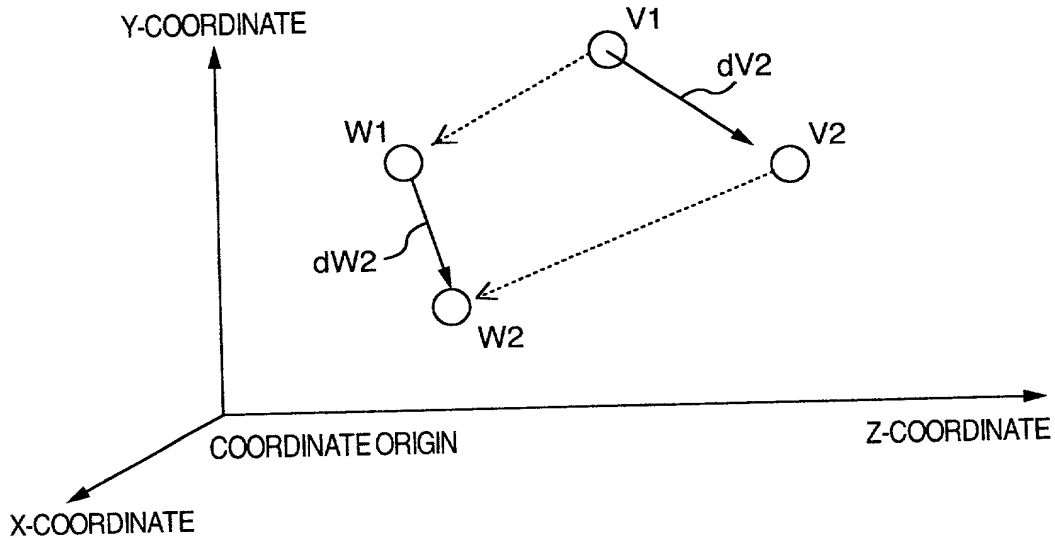


FIG.6B

AFFINE TRANSFORMATION : $W = M * V + P$	. . . EXPRESSION (1)
$  \begin{pmatrix} tx \\ ty \\ tz \end{pmatrix} = \begin{pmatrix} m11 & m12 & m13 \\ m21 & m22 & m23 \\ m31 & m32 & m33 \end{pmatrix} \begin{pmatrix} x \\ y \\ z \end{pmatrix} + \begin{pmatrix} p \\ q \\ r \end{pmatrix} \dots \text{EXPRESSION (2)}  $	

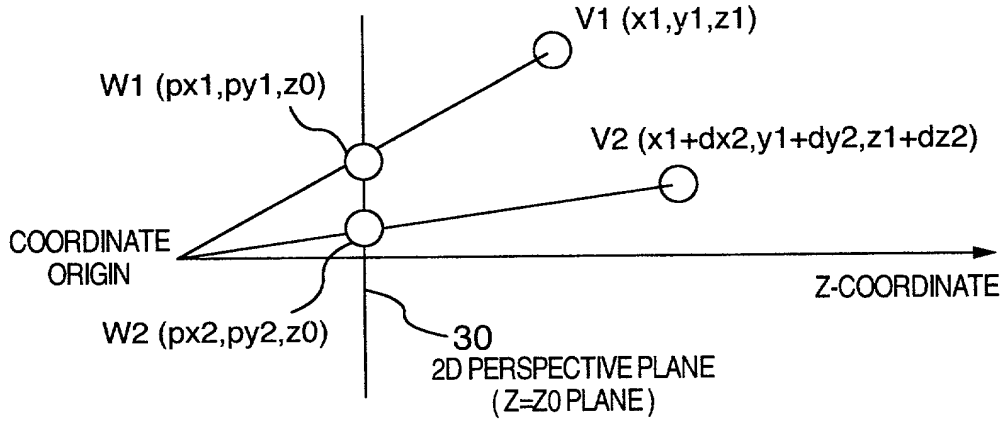
FIG.7A

COORDINATE DIFFERENTIAL EXPRESSION BEFORE AFFINE TRANSFORMATION (REFERENCE POINT=V1)			
VERTEX	X - COMPONENT	Y - COMPONENT	Z - COMPONENT
V1	X - COMPONENT OF V1	Y - COMPONENT OF V1	Z - COMPONENT OF V1
V2	X - COMPONENT OF dV2	Y - COMPONENT OF dV2	Z - COMPONENT OF dV2

FIG.7B

COORDINATE DIFFERENTIAL EXPRESSION AFTER AFFINE TRANSFORMATION (REFERENCE POINT=W1)			
VERTEX	X - COMPONENT	Y - COMPONENT	Z - COMPONENT
W1	X - COMPONENT OF $M^*V1+P$	Y - COMPONENT OF $M^*V1+P$	Z - COMPONENT OF $M^*V1+P$
W2	X - COMPONENT OF $M^*dV2$	Y - COMPONENT OF $M^*dV2$	Z - COMPONENT OF $M^*dV2$

# FIG.8A

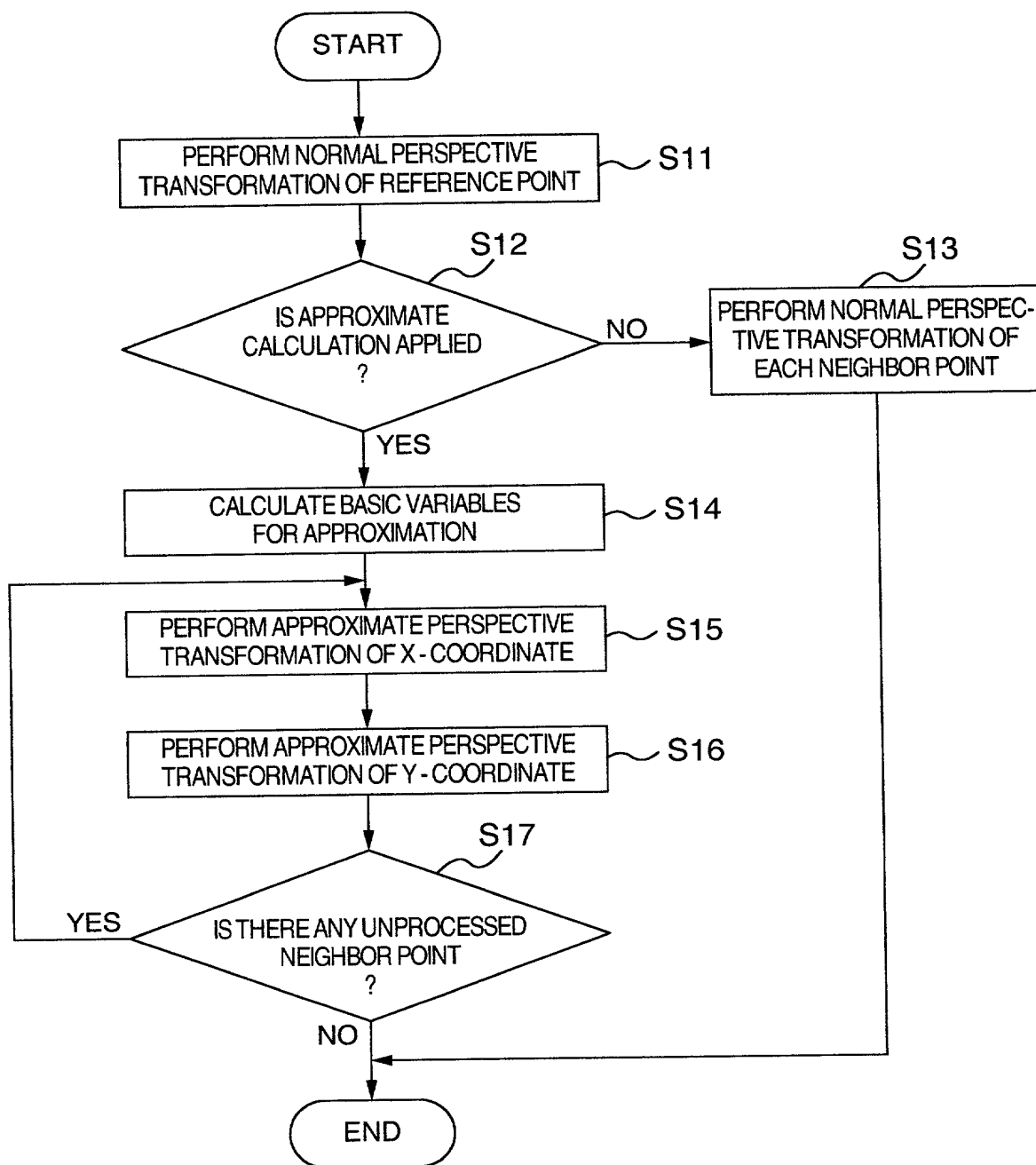


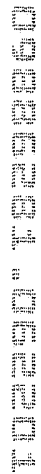
# FIG.8B

$A=z0/z1$	EXPRESSION 1
$B=z0/(z1*z1)$	EXPRESSION 2
$px1=A*x1$	EXPRESSION 3
$py1=A*y1$	EXPRESSION 4
$px2=(A-B*dz2)*(x1+dx2)$	EXPRESSION 5
$py2=(A-B*dz2)*(y1+dy2)$	EXPRESSION 6
$D=z0/(z1+dz)$	EXPRESSION 7
$px=D*(x1+dx)$	EXPRESSION 8
$py=D*(y1+dy)$	EXPRESSION 9
$\frac{1}{z+dz} = \frac{1}{z} - \frac{1}{z^2}dz + \frac{1}{z^3}dz^2$ $- \frac{1}{z^4}dz^3 + \dots$	EXPRESSION 10
$\frac{z0}{z1+dz2} = \frac{z0}{z1} - \frac{z0}{z1^2} * dz2$	EXPRESSION 11

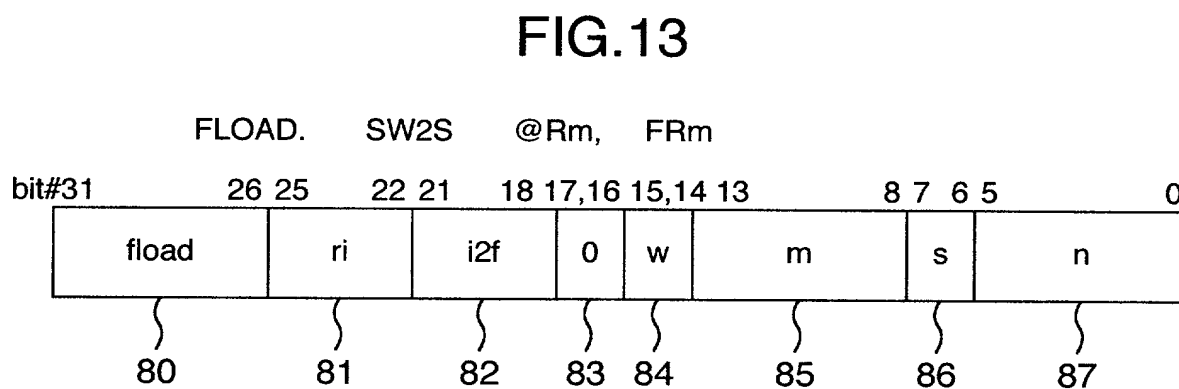
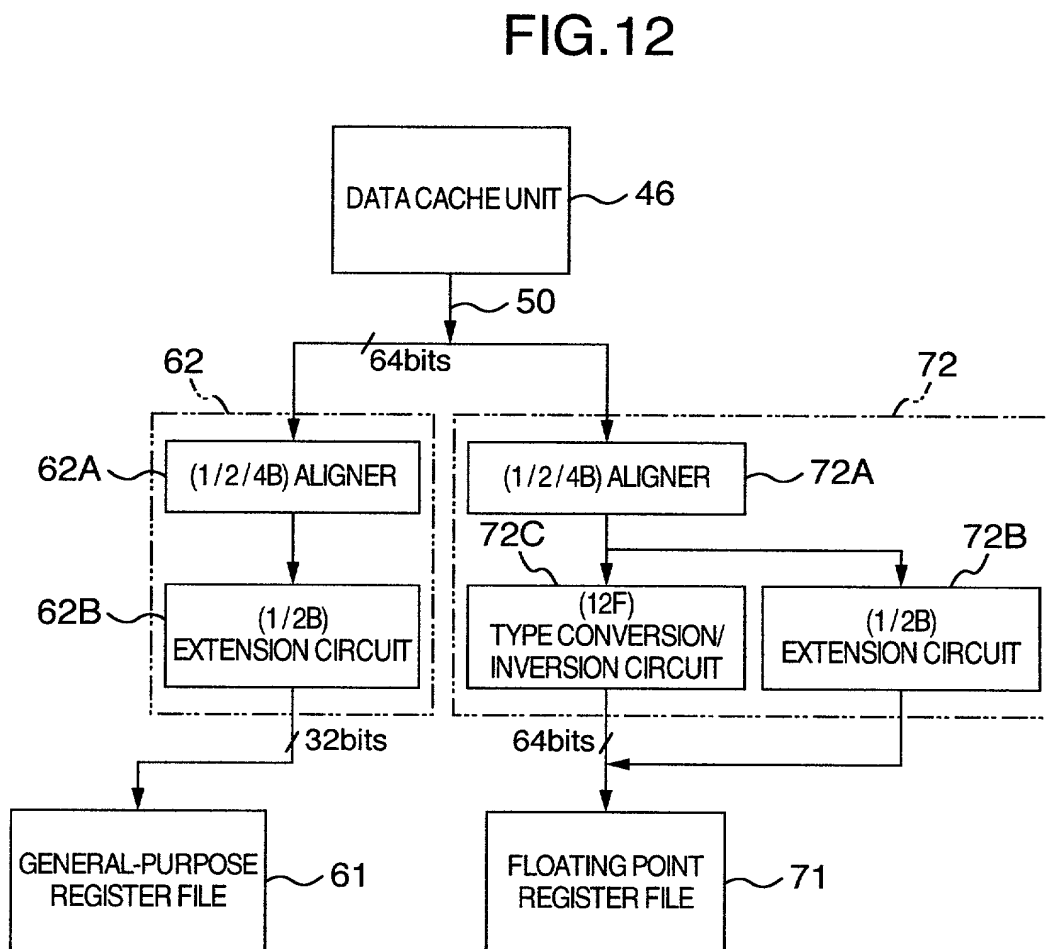


FIG.9



[illegible][illegible][illegible]





Climatic Data	
Temperature (°C)	20.0
Humidity (%)	60.0
Wind Speed (m/s)	1.0
Soil Data	
Soil Type	Clay
Soil Moisture (%)	10.0
Soil pH	7.0
Soil Nitrogen (mg/kg)	10.0
Soil Phosphorus (mg/kg)	10.0
Soil Potassium (mg/kg)	10.0
Soil Calcium (mg/kg)	10.0
Soil Magnesium (mg/kg)	10.0
Soil Sulfur (mg/kg)	10.0
Soil Zinc (mg/kg)	10.0
Soil Copper (mg/kg)	10.0
Soil Manganese (mg/kg)	10.0
Soil Iron (mg/kg)	10.0
Soil Boron (mg/kg)	10.0
Soil Nickel (mg/kg)	10.0
Soil Cobalt (mg/kg)	10.0
Soil Molybdenum (mg/kg)	10.0
Soil Selenium (mg/kg)	10.0
Soil Vanadium (mg/kg)	10.0
Soil Chromium (mg/kg)	10.0
Soil Arsenic (mg/kg)	10.0
Soil Lead (mg/kg)	10.0
Soil Cadmium (mg/kg)	10.0
Soil Mercury (mg/kg)	10.0
Soil Barium (mg/kg)	10.0
Soil Strontium (mg/kg)	10.0
Soil Rubidium (mg/kg)	10.0
Soil Potassium (mg/kg)	10.0
Soil Calcium (mg/kg)	10.0
Soil Magnesium (mg/kg)	10.0
Soil Sulfur (mg/kg)	10.0
Soil Zinc (mg/kg)	10.0
Soil Copper (mg/kg)	10.0
Soil Manganese (mg/kg)	10.0
Soil Iron (mg/kg)	10.0
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Soil Cobalt (mg/kg)	10.0
Soil Molybdenum (mg/kg)	10.0
Soil Selenium (mg/kg)	10.0
Soil Vanadium (mg/kg)	10.0
Soil Chromium (mg/kg)	10.0
Soil Arsenic (mg/kg)	10.0
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Soil Strontium (mg/kg)	10.0
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Soil Potassium (mg/kg)	10.0
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Soil Magnesium (mg/kg)	10.0
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Soil Nickel (mg/kg)	10.0
Soil Cobalt (mg/kg)	10.0
Soil Molybdenum (mg/kg)	10.0
Soil Selenium (mg/kg)	10.0
Soil Vanadium (mg/kg)	10.0
Soil Chromium (mg/kg)	10.0
Soil Arsenic (mg/kg)	10.0
Soil Lead (mg/kg)	10.0
Soil Cadmium (mg/kg)	10.0
Soil Mercury (mg/kg)	10.0
Soil Barium (mg/kg)	10.0
Soil Strontium (mg/kg)	10.0
Soil Rubidium (mg/kg)	10.0
Soil Potassium (mg/kg)	10.0
Soil Calcium (mg/kg)	10.0
Soil Magnesium (mg/kg)	10.0
Soil Sulfur (mg/kg)	10.0
Soil Zinc (mg/kg)	10.0
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Soil Arsenic (mg/kg)	10.0
Soil Lead (mg/kg)	10.0
Soil Cadmium (mg/kg)	10.0

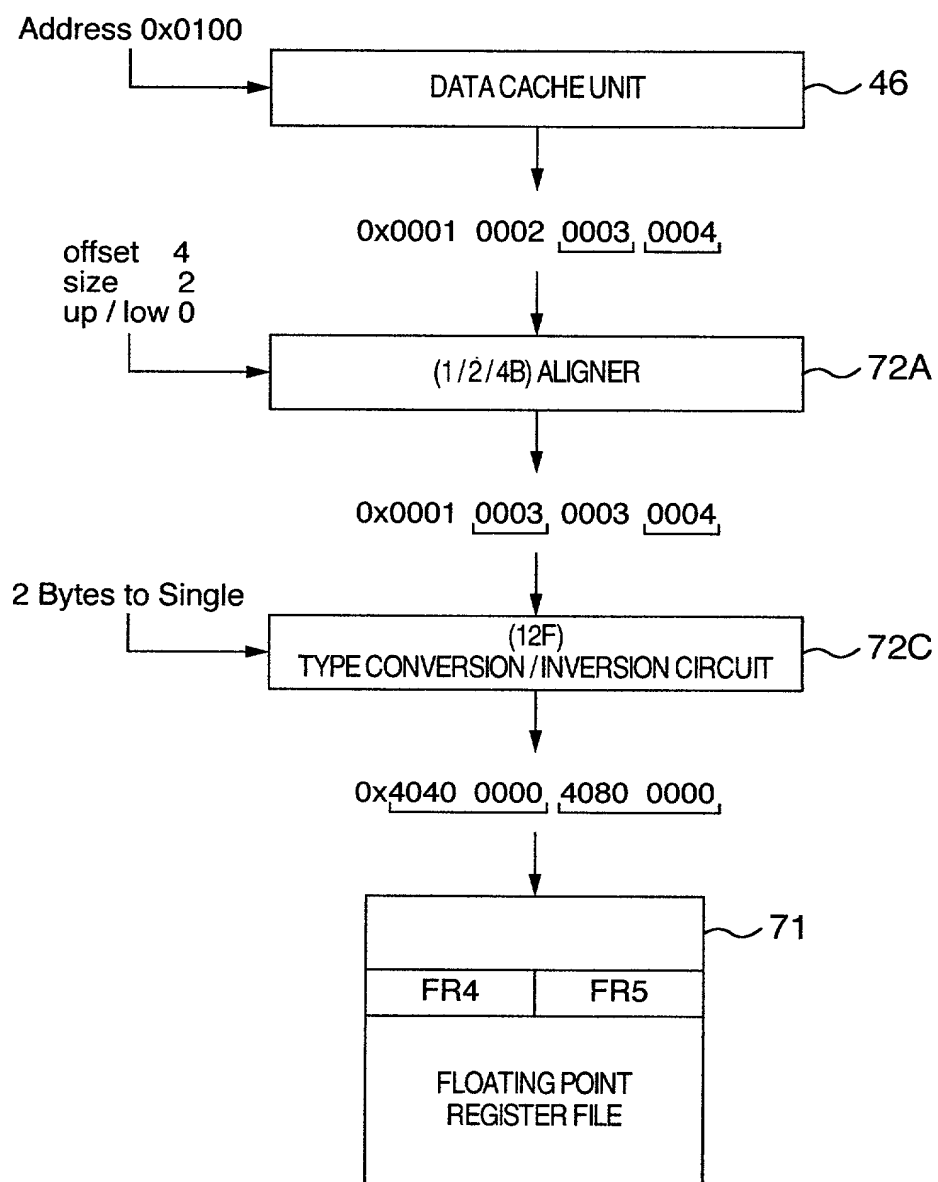


FIG.15

